<u>AMENDMENTS TO THE CLAIMS</u>

This listing of claims will replace all prior versions, and listings, of claims in the application:

<u>Listing of Claims:</u>

1. (Currently Amended) A method for encoding and decoding first and second data streams comprising:

encoding said first data stream using a first encoder to produce a first <u>optimal lossless</u> encoded data stream;

encoding said second data stream using a second encoder to produce a second <u>optimal lossless</u> encoded data stream;

providing said first and second encoded data streams to a receiver;

decoding said first and second encoded data streams using a single <u>optimal lossless</u> decoder.

2. (Canceled) The method of claim 1 wherein said encoding and decoding are lossless.

3. (Canceled) The method of claim 1 wherein said encoding and decoding are near-lossless.

4. (Original) The method of claim 1 wherein said receiver is provided one of said first and second data streams as side-information.

5. (Currently Amended) The method of claim 4 wherein encoding of said second stream satisfies a prefix condition and said prefix condition is satisfied for a code γ_Y for <u>data source</u> Y given <u>data source</u> X when for each <u>element</u> $x \in X$, and <u>for</u> each <u>element</u> $y, y' \in A_x$, the description of y is not a prefix of the description of y' <u>and where A_x is a set.</u>

6. (Original) The method of claim 5 wherein said code 7, is a matched code.

7. (Original) The method of claim 6 wherein said code γ_Y, is an instantaneous, side-information matched code for $p(x,y)$ when γ_Y is a matched code for some partition $\mathcal{P}(\mathcal{Y})$ for $p(x,y)$.

8. (Withdrawn) A method of generating code comprising:

obtaining an alphabet of symbols generated by a data source;

identifying combinable symbols of said alphabet and generating subsets of combinable symbols;

identifying optimal partitions of said subsets of symbols to generate a list of groups; using said list of groups to generate partitions of the full alphabet.

9. (Withdrawn) The method of claim 8 further comprising determining a matched code for each partition.

10. (Withdrawn) The method of claim 8 further comprising selecting a partition whose matched code has a best rate.

11. (Withdrawn) The method of claim 8 wherein said matched code comprises a Huffman code.

12. (Withdrawn) The method of claim 8 wherein said matched code comprises an arithmetic code.

13. (Withdrawn) The method of claim 8 wherein symbols $y_1, y_2 \in \mathcal{Y}$ can be combined under $p(x,y)$ if $p(x,y_1)p(x,y_2) = 0$ for each $x \in \mathcal{X}$.

14. (Withdrawn) The method of claim 13 wherein for each symbol a set C_y is generated.

15. (Withdrawn) The method of claim 13 further including the step of identifying all non-empty subsets for each set C_y.

16. (Withdrawn) The method of claim 8 wherein a partition is complete and nonoverlapping if $\mathcal{P}(\mathcal{Y}) = \{\mathcal{G}_1, \mathcal{G}_2, \ldots, \mathcal{G}_m\}$ satisfies $\bigcup_{i=1}^{m} \mathcal{G}_i = \mathcal{Y}$ and $\mathcal{G}_j \cap \mathcal{G}_k = \phi$ for any $j \neq k$, where

each $\mathcal{G}_i \in \mathcal{P}(\mathcal{Y})$ is a group for $p(x, y)$, and $\mathcal{G}_j \cup \mathcal{G}_k$ and $\mathcal{G}_j \cap \mathcal{G}_k$ refer to the union and intersection respectively of the members of $\mathcal{G}_j$ and $\mathcal{G}_k$.

17. (Withdrawn) The method of claim 8 wherein said coding scheme is a lossless coding scheme.

18. (Withdrawn) The method of claim 8 wherein said coding scheme is a near-lossless coding scheme.

19. (Withdrawn) The method of claim 8 wherein said coding scheme is a side-information, lossless coding scheme.

20. (Withdrawn) The method of claim 8 wherein said coding scheme is a side-information, near-lossless coding scheme.

21. (Withdrawn) A method of code for X and Y comprising:

generating a partition pair $\mathcal{P}(\mathcal{X})$ and $\mathcal{P}(\mathcal{Y})$ such that each partition is a legitimate partition for a side-information, lossless decoding scheme;

identifying said partition pair as a legitimate partition for general lossless decoding if the two descriptions together give enough information to decode X and Y uniquely.

22. (Withdrawn) The method of claim 21 wherein said partition pair is a legitimate partition pair when for any $x, x' \in \mathcal{X}$ such that $\{\gamma_X(x), \gamma_X(x')\}$ does not satisfy the prefix condition, $\{\gamma_Y(y) : y \in \mathcal{A}_x \cup \mathcal{A}_{x'}\}$ satisfies the prefix condition.

23. (Withdrawn) The method of claim 21 wherein said partition pair is a legitimate partition pair

when for any $y, y' \in \mathcal{Y}$ such that $\{\gamma_Y(y), \gamma_Y(y')\}$ does not satisfy the prefix condition, $\{\gamma_X(x) : x \in \mathcal{B}_y \cup \mathcal{B}_{y'}\}$ satisfies the prefix condition.

24. (Withdrawn) A method for generating a MASC code comprising:

generating instantaneous code by:

generating subtrees $\mathcal{T}_X$ and $\mathcal{T}_Y$ descending from nodes n_X and n_Y (including n_X and n_Y respectively).

25. (Withdrawn) The method of claim 24 further comprising satisfying one of the following conditions;

(A) $X \in \mathcal{T}_Y$ or n_Y is a leaf implies that $Y \in n_Y$, and $Y \in \mathcal{T}_Y$ or n_X is a leaf implies that $X \in n_X$;

(B) $X \in \mathcal{T}_X$ implies that $Y \notin n_Y$;

(C) $Y \in \mathcal{T}_Y$ implies that $X \notin n_X$.

26. (Withdrawn) The method of claim 25 wherein said instantaneous code is lossless when: generating code such that for any $(x, y) \in \mathcal{X} \times \mathcal{Y}$ with $p(x, y) > 0$, final nodes (n_X, n_Y) are generated that satisfy;

(D) $(x, y) \in n_X \times n_Y$ and for any other $x' \in n_X$ and $y' \in n_Y$, $p(x, y') = p(x', y) = p(x', y') = 0$.

27. (Withdrawn) A method of generating code comprising:

obtaining an alphabet of symbols generated by a data source

determining which of said symbols can have identical code descriptions and which symbols cannot have identical code descriptions;

28. (Withdrawn) The method of claim 27 further including determining which of said symbols can have code descriptions for which one symbols' code description is a prefix of another symbol's code description.

29. (Withdrawn) A method of generating code for data sources X and Y having data rates Rx and Ry respectively, comprising:

generating a code that minimizes $\lambda R_X + (1-\lambda)R_Y$ for an arbitrary value of λ.

30. (Withdrawn) The method of claim 29 wherein $\lambda \in [0,1]$.

31. (Currently Amended) A method for encoding and decoding a plurality of data streams comprising:

encoding said plurality of data streams using a plurality of encoders to produce a plurality of optimal lossless encoded data streams;

providing said plurality of optimal lossless encoded data streams to a receiver;

decoding said plurality of encoded data streams using a single optimal lossless decoder.

32. (Canceled) The method of claim 31 wherein said encoding and decoding are lossless.

33. (Canceled) The method of claim 31 wherein said encoding and decoding are near-lossless.

34. (Original) The method of claim 31 wherein said decoding is accomplished using side-information.

35. (Withdrawn) A method of designing codes comprising:

obtaining an alphabet of symbols generated by a data source;

ordering said alphabet of symbols;

identifying restrictions of a class of codes based on said ordering of said alphabet;

designing code for said restricted class for said ordering of said alphabet.

36. (Withdrawn) The method of claim 35 wherein said restrictions include a requirement that symbols be adjacent symbols.

37. (Withdrawn) The method of claim 35 further including the step of selecting an ordering of said alphabet based on generating code for a plurality of orderings.

38. (Withdrawn) The method of claim 37 wherein an ordering is selected based on a best rate resulting from one of said orderings.